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Faunistic and taxonomic notes on jumping plant-lice from the Alps (Hemiptera: Psylloidea: Aphalarinae)

Daniel Burckhardt & Pavel Lauterer

ABSTRACT

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The previously unknown fifth instar larva of *Aphalara longicaudata* is described and illustrated on the basis of material from the Rigi mountain (canton Schwyz). It forms leaf roll galls on *Polygonum bistorta*. The following three *Craspedolepta* spp. are recorded for the first time from Switzerland: *C. campestellata* (canton Ticino), *C. conspersa* (canton Ticino) and *C. latior* (canton Grisons). Detailed informations on Swiss localities (from the cantons Grisons and Valais) are given for *C. malachitica*. *Craspedolepta sonchi* is recorded for the first time from Italy (Trentino). A table and figures are provided to separate the three closely related species *Craspedolepta campestellata*, *C. latior* and *C. malachitica*.

Keywords: Hemiptera, Psylloidea, faunistic, taxonomy.

Introduction

The Alps constitute in Europe an area of high biological diversity. For plants this is well documented but for the arthropods detailed information on many groups is still scarce. The jumping plant-lice or psyllids are generally highly host specific plant sap-sucking insects. As their almost exclusively dicotyledonous hosts, psyllids are relatively species rich in the Alps.

The subfamily Aphalarinae is atypical within Psylloidea for two reasons: it is predominantly north temperate rather than tropical or south temperate, and it is associated mostly with herbaceous plants rather than trees or shrubs. While most aphalarine genera are small, most species of the subfamily belong to the two genera *Aphalara* FOERSTER and *Craspedolepta* ENDERLEIN. The former is often associated with Polygonaceae, the latter with Asteraceae respectively. Species of both genera are difficult to identify as differences

between species are subtle and infraspecific variation is marked. The host plants for most Central European aphalarine species are known but the larvae, which are often hard to find, have not been described for all species.

The present paper describes the previously unknown larva of *Aphalara longicaudata*, one of the most common species of subalpine meadows, and reports three *Craspedolepta* species for the first time from the Swiss Alps as well as one from the Italian Alps respectively, based on recent field work and revisions of collections.

Material and Methods

Material from the following institutions was examined: Muséum d'histoire naturelle Genève (MHNG), Naturhistorisches Museum Basel (NHMB) and Zoologische Staatssammlung München (ZSM). The specimens are conserved dry or slide mounted, or are stored in 70 % ethanol. The drawings were made from slide mounted specimens. The morphological terminology follows Ossianilsson (1992).

Results

Aphalara longicaudata WAGNER & FRANZ, 1961

Material examined: Switzerland: SZ, Rigi, path from Staffel to Kulm, 1600–1700 m, 2. x. 2003, *Polygonum bistorta*, D. Burckhardt leg. (10 larvae, NHMB, slide mounted).

Description of fifth instar larva (Fig. 1). Colour (from slide mounted specimens) of sclerites yellow or ochreous, membranes whitish, tip of rostrum black. Body flattened, elongate. Body surface weakly rugose and almost glabrous, apart from a few scattered simple setae on dorsum and lanceolate setae on body margin, antenna and legs. Head irregularly convex anteriorly with small indentation in the middle, bearing a few conspicuous lanceolate setae along fore margin. Eyes relatively large. Antenna 7-segmented, bearing a rhinarium each on segments 3 to 6 and two on segment 7; rhinaria on segments 3, 5 and 7 large, on segments 4 and 6 small. Forewing pad with large, anteriorly rounded humeral lobes; dorsal surface bearing a few scattered setae, which are distinctly smaller than the marginal lanceolate setae, which are developed in anterior half, but smaller and sparse or absent in posterior half. Tarsal arolium oval, slightly longer than claws. Caudal plate broadly,

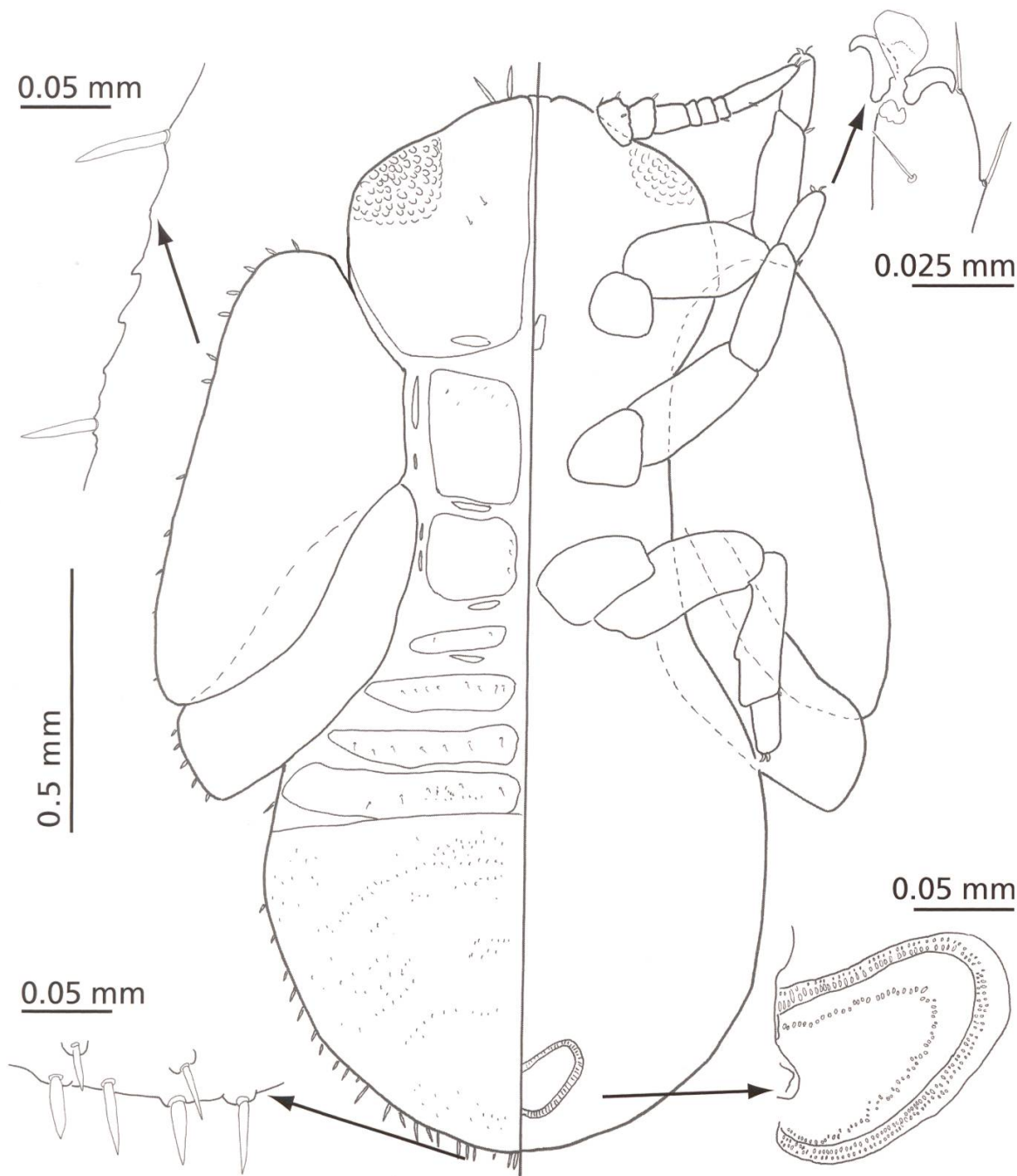


Fig. 1. Fifth instar larva of *Aphalara longicaudata*; left dorsal, right ventral surface.

irregularly rounded posteriorly; marginal lanceolate setae slightly larger and spaced more densely than those on forewing pad. Circumanal ring rounded laterally; outer ring consisting of two unequal rows of pores.

Measurements (in mm) and ratios (of 10 specimens). Body length (BL) 1.85–2.30; body width (BW) 1.25–1.45; antennal length (AL) 0.35–0.45; forewing pad length (FL) 0.85–0.90; caudal plate length (CPL) 0.60–0.70; caudal plate width (CPW) 0.90–1.00; circumanal ring width (CRW) 0.20–0.30; BL/BW 1.43–1.62; FL/AL 2.00–2.43; CPL/CPW 0.63–0.78; CPW/CRW 3.33–4.50; length ratio of apical antennal segment/protarsus 1.2.

Host plant and gall. The larvae induce galls on the leaves of *Polygonum bistorta* (Polygonaceae). The leaf margins are curled downwards and slightly inflated forming a roll. Larvae sit in these rolls often in large numbers. The galls are on the ground usually hidden by other vegetation. The galls reported by Houard (1908, number 2168A) and Buhr (1965, number 4995) attributed to an unidentified psyllid are referable to *A. longicaudata*.

Comments. *A. longicaudata* differs from *A. exilis* (WEBER & MOHR), *maculipennis* LÖW and *ulicis* FOERSTER in the laterally rounded circumanal ring, from *A. affinis* (ZETTERSTEDT), *avicularis* OSSIANNILSON, *freji* BURCKHARDT & LAUTERER, *polygoni* FOERSTER and some specimens of *crispicola* OSSIANNILSON in the presence of marginal lanceolate setae on the forewing pad; from *A. borealis* HESLOP-HARRISON and *crispicola* in the absence of conspicuous setae on the dorsal surface of the forewing pad; and from *A. calthae* (LINNAEUS) in the marginal lanceolate setae which are much sparser or absent in the posterior half of the forewing pad.

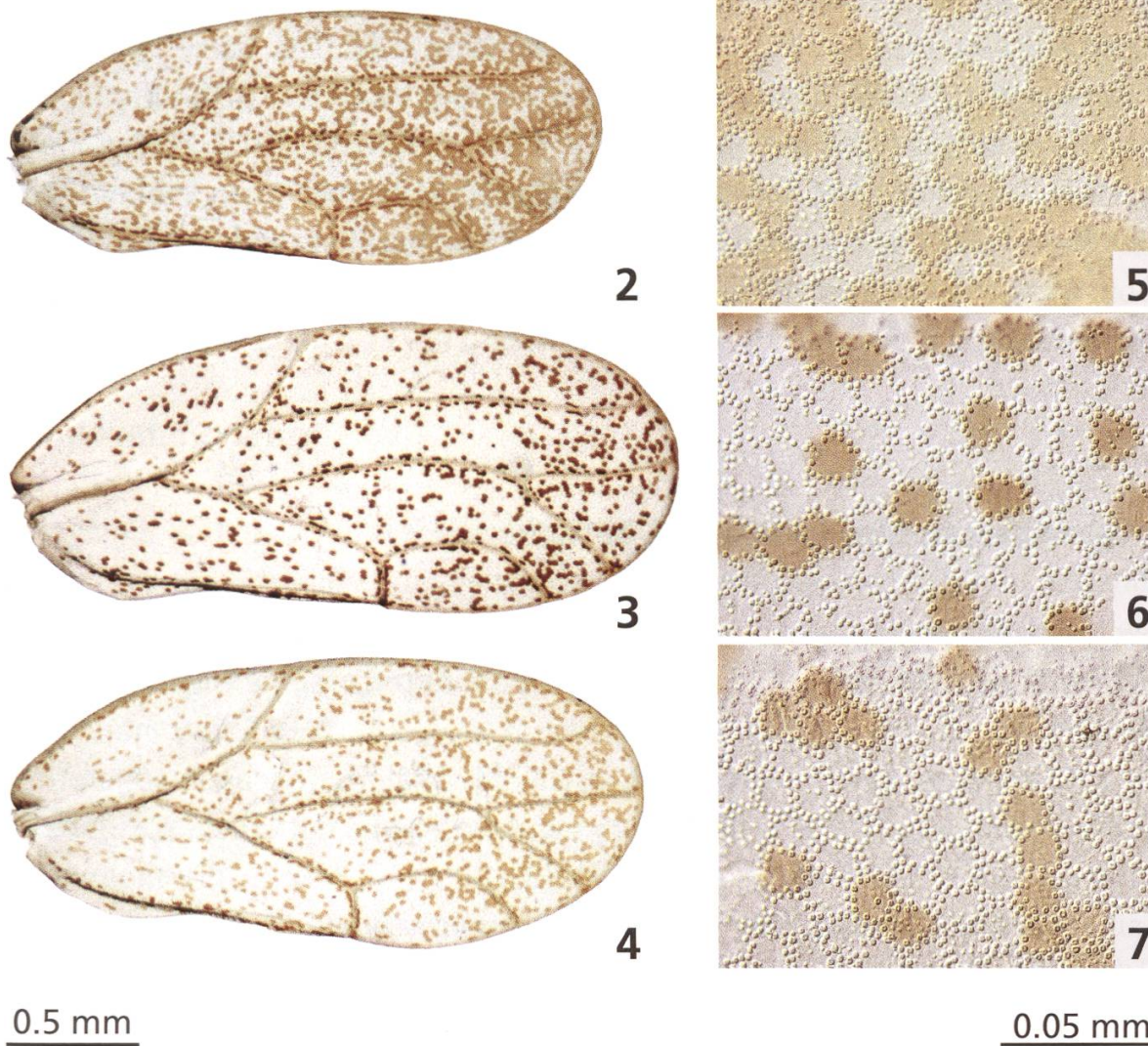
	<i>C. campestrella</i>	<i>C. latior</i>	<i>C. malachitica</i>
Colour of dark spots on forewing	brown	dark brown to almost black	pale to yellowish brown
Density of dark spots on forewing	densely spaced, partly confluent in apical part of wing (Fig. 2)	sparsely spaced, not confluent in apical part of wing (Fig. 3)	sparsely spaced, not confluent in apical part of wing (Fig. 4)
Surface spinules	densely spaced (Fig. 5)	less densely spaced (Fig. 6)	densely spaced (Fig. 7)

Tab. 1. Forewing characters to differentiate the three closely related *Craspedolepta campestrella* OSSIANNILSSON, *latior* WAGNER and *malachitica* (DAHLBOM).

Craspedolepta campestrella OSSIANNILSSON, 1987

Switzerland: TI, Ticino Valley, Ambri, 980 m, 28. vii. 1978, swept from herbaceous vegetation, D. Burckhardt leg. (3 ♀, MHNG, dry mounted).

Comment. The species is monophagous on *Artemisia campestris*. It differs from the closely related *C. latior* and *malachitica* as indicated in Tab. 1. For a detailed description see Ossiannilsson (1992). The species is new for Switzerland.



Figs. 2–7. *Craspedolepta* spp. – 2, 5: *C. campestris*; – 3, 6: *C. latior*; – 4, 7: *C. malachitica*; – 2–4: Forewing; – 5–7: surface spinules in apical portion of cell r_2 .

Craspedolepta conspersa Löw, 1888

Switzerland: TI, Biasca, 17. vi. 1995, G. Bächli & B. Merz leg. (1 ♂, NHMB, dry mounted).

Comment. The species is monophagous on *Artemisia vulgaris*. It is characterised by the male paramere and the female terminalia. For a detailed description see Conci & Tamanini (1983). The species is new for Switzerland.

Craspedolepta latior WAGNER, 1944

Switzerland: GR, Lower Engadine, Zernez, Munt Baselgia, 1560 m, 10. vii. 2002, *Artemisia vulgaris*, D. Burckhardt leg. (4 ♂, 1 ♀, NHMB, dry mounted); same but Zernez, Clüs, 1470 m, 14. vii. 2005, *Artemisia vulgaris* (many ♂ and ♀,

NHMB, dry mounted and in alcohol); same but Ramosch, 1110 m, 13. viii. 1979, *Artemisia vulgaris* (3 ♂, 5 ♀, MHNG, dry and slide mounted); same but Resgia, E Ramosch, 1090 m, 14. viii. 1979, *Artemisia vulgaris* (1 ♀, MHNG, dry mounted); same but Val Müstair, Santa Maria, 1380 m, 10. viii. 1979, various herbaceous plants including *Artemisia vulgaris* (5 ♂, 11 ♀, MHNG, dry mounted).

Comment. The species is monophagous on *Artemisia vulgaris*. It differs from the closely related *C. campestellata* and *malachitica* as indicated in Tab. 1. For a detailed description see Ossiannilsson (1992). The species is new for Switzerland.

***Craspedolepta malachitica* (DAHLBOM, 1851)**

Switzerland: GR, Mittelbünden, Malixer Kreuz, 27. vii. 1945, *Artemisia absinthium*, H. Schaefer leg. (2 ♀, NHMB, dry mounted); same but Schanfigg, Castiell, 25. vii. 1945, *Artemisia absinthium* (3 ♂, 5 ♀, NHMB, dry mounted); Lower Engadine, Lavin, 1460–1480 m, 24. vii. 1978, herbaceous vegetation, D. Burckhardt leg. (2 ♂, 3 ♀, MHNG, dry mounted); same but Crush, W Ramosch, 1300 m, 3. viii. 1978, *Melilotus officinalis* (1 ♂, 1 ♀, MHNG, dry mounted); same but Ramosch, 23. vi. 1976, *Artemisia absinthium*, H. Günthart leg. (2 ♂, 3 ♀, NHMG, dry mounted); same but Ramosch, 1110 m, 13. viii. 1979, herbaceous vegetation including *Artemisia absinthium*, D. Burckhardt leg. (1 ♂, 7 ♀, MHNG, dry mounted); same but Ramosch, 1280 m, 3. viii. 1978 (1 ♂, MHNG, dry mounted); same but road Strada to Ramosch, 1200–1300 m, 16. viii. 1979, *Artemisia absinthium* (4 ♀, MHNG, dry mounted); same but Val Müstair, Santa Maria, 1180 m, 10. viii. 1979, *Rumex* (1 ♂, 1 ♀, MHNG, dry mounted); – VS, Upper Valais, Binn, 1399 m, 23. vii. 1946, *Artemisia absinthium*, H. Schaefer leg. (4 ♂, 4 ♀, NHMB, dry mounted); same but Lower Valais, Visperterminen, 21. vii. 2004, G. Bächli (2 ♂, 4 ♀, NHMB, dry mounted); same but Val d'Hérence, Villa to Lasage, 1680 m, 11. vii. 1986, D. Burckhardt (4 ♀, NHMB, dry mounted); same but Saillon, South slope, 1680 m, 21. vi. 1982, steppe vegetation, C. Lienhard (1 ♂, 4 ♀, MHNG, dry mounted); same but Martigny, Les Follatères, 470 m, 27. vii. 1997, D. Burckhardt (1 ♀, NHMB, dry mounted).

Comment. The species is associated with *Artemisia absinthium* and *maritima*. It differs from the closely related *C. campestellata* and *latior* as indicated in Tab. 1. For a detailed description see Ossiannilsson (1992).

***Craspedolepta sonchi* (FOERSTER, 1948)**

Italy: Trentino, Monte Baldo Altissimo, 18. vii. 1914 (1 ♂, ZSM, dry mounted).

Comment. *C. sonchi* is a member of the *Craspedolepta flavipennis* (FOERSTER) complex and develops on *Leontodon autumnale* and *hispidus*. The West palaeartic members of the species group were revised by Lauterer & Burckhardt (2004) who provide species diagnoses. The species is new for Italy.

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